

1 WHAT IS CLAIMED IS:

- 2
- 3 1. An integrated process for lowering the pour point of Fischer-Tropsch
4 derived wax which comprises:
- 5
- 6 (a) collecting separately from a Fischer-Tropsch unit a
7 Fischer-Tropsch wax and a Fischer-Tropsch condensate;
- 8
- 9 (b) pyrolyzing the Fischer-Tropsch wax in a thermal cracking zone
10 under thermal cracking conditions pre-selected to achieve a
11 cracking conversion of the paraffins molecules present in the
12 Fischer-Tropsch wax of at least 10 percent;
- 13
- 14 (c) recovering from the thermal cracking zone a low pour point
15 Fischer-Tropsch derived wax and a Fischer-Tropsch derived
16 overhead product; and
- 17
- 18 (d) mixing at least a portion of the Fischer-Tropsch derived
19 overhead product recovered in step (c) and at least a portion of
20 the Fischer-Tropsch condensate collected in step (a) with at
21 least a portion of the low pour point Fischer-Tropsch derived
22 wax in the proper proportion to produce a Fischer-Tropsch
23 derived waxy product having a pour point equal to or below
24 about 40 degrees C.
- 25
- 26 2. The process of claim 1 wherein the thermal cracking conditions in the
27 thermal cracking zone are pre-selected to achieve a cracking
28 conversion of at least 20 percent.
- 29
- 30 3. The process of claim 2 wherein the thermal cracking conditions in the
31 thermal cracking zone are pre-selected to achieve a cracking
32 conversion of at least 30 percent.

- 1 4. The process of claim 3 wherein the thermal cracking conditions in the
2 thermal cracking zone are pre-selected to achieve a cracking
3 conversion of at least 50 percent.
4
- 5 5. The process of claim 1 wherein the Fischer-Tropsch derived waxy
6 product of step (d) has a pour point below about 20 degrees C.
7
- 8 6. The process of claim 1 wherein the Fischer-Tropsch derived overhead
9 product of step (c) is further separated prior to step (d) into a C₅ plus
10 hydrocarbon product and a C₄ minus hydrocarbon product and the
11 C₅ plus hydrocarbon product is mixed with the Fischer-Tropsch
12 condensate and the low pour point Fischer-Tropsch derived wax in
13 step (d) to produce the Fischer-Tropsch derived waxy product.
14
- 15 7. The process of claim 6 wherein the C₄ minus hydrocarbon product is
16 recycled to the Fischer-Tropsch unit.
17
- 18 8. The process of claim 6 wherein methane is separately recovered from
19 the C₄ minus hydrocarbon product prior to the C₄ minus hydrocarbon
20 product being recycled to the Fischer-Tropsch unit and the methane is
21 recycled to a reformer for conversion into syngas for use as feed to the
22 Fischer-Tropsch unit.
23
- 24 9. The process of claim 1 further including the step of blending with the
25 Fischer-Tropsch waxy product a petroleum derived crude.
26
- 27 10. The process of claim 1 wherein the Fischer-Tropsch derived waxy
28 product also has a reduced viscosity as compared to the
29 Fischer-Tropsch wax.

- 1 11. A process for lowering the pour point of Fischer-Tropsch derived wax
2 which comprises:
3
4 (a) collecting separately from a Fischer-Tropsch unit a
5 Fischer-Tropsch wax and a Fischer-Tropsch condensate;
6
7 (b) pyrolyzing the Fischer-Tropsch wax in a thermal cracking zone
8 under thermal cracking conditions pre-selected to achieve a
9 cracking conversion of the paraffins molecules present in the
10 Fischer-Tropsch wax of at least 10 percent;
11
12 (c) recovering from the thermal cracking zone a thermally cracked
13 Fischer-Tropsch derived wax intermediate having a lower pour
14 point than the Fischer-Tropsch wax; and
15
16 (d) mixing at least a portion of the Fischer-Tropsch condensate
17 collected in step (a) with at least a portion of the thermally
18 cracked Fischer-Tropsch derived wax intermediate in the proper
19 proportion to produce a Fischer-Tropsch derived waxy product
20 having a pour point equal to or below about 40 degrees C.
21
22 12. The process of claim 11 wherein the thermal cracking conditions in the
23 thermal cracking zone are pre-selected to achieve a cracking
24 conversion of at least 20 percent.
25
26 13. The process of claim 12 wherein the thermal cracking conditions in the
27 thermal cracking zone are pre-selected to achieve a cracking
28 conversion of at least 30 percent.
29
30 14. The process of claim 13 wherein the thermal cracking conditions in the
31 thermal cracking zone are pre-selected to achieve a cracking
32 conversion of at least 50 percent.

- 1 15. The process of claim 11 wherein the thermally cracked
2 Fischer-Tropsch derived wax intermediate has a pour point of less than
3 about 45 degrees C.
4
- 5 16. The process of claim 11 wherein the Fischer-Tropsch derived waxy
6 product of step (d) has a pour point below about 20 degrees C.
7
- 8 17. The process of claim 11 further including the step of blending with the
9 Fischer-Tropsch waxy product a petroleum derived crude.
10
- 11 18. The process of claim 11 wherein the Fischer-Tropsch derived waxy
12 product also has a reduced viscosity as compared to the
13 Fischer-Tropsch wax.